# DATA SHEET
## Synchronous Alternator

| | | | |
|---|---|---|---|
| Customer | : | Notes: | |
| Customer reference | : | | |
| Product line | : AG10-250SI10AI | Product code | : 14418535 |
| Area classification | : Safe | | 1010264379 |

**General data**

| | |
|---|---|
| Frame (IEC) | : 250 |
| Insulation Class | : 180°C (H) |
| Total Harmonic Distortion (no load) | : ≤ 3% |
| Stator winding pitch | : 2/3 |
| Altitude | : up to 1000 m.a.s.l |
| Number of Leads | : 12 |
| Power factor | : 0.8 to 1.0 |
| Excitation system | : Brushless with Auxiliary Coil |
| Cooling | : IC01 |

| | |
|---|---|
| Degree of protection | : IP23 |
| Mounting style | : B15T |
| Number of poles | : 4 |
| Type of Pole | : Salient |
| Nominal rotation - 50 Hz | : 1500 rpm |
| Nominal rotation - 60 Hz | : 1800 rpm |
| Overspeed | : 2250 rpm |
| Alternator mass | : 644 kg |
| Overload | : 1.1x In per 1h each 6h |
| Momentary Overload | : 1.5x In per 30s |

| | Frequency and number of phases | 50 Hz | | | | 60 Hz | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 3ph | | | 1ph | 3ph | | | | 1ph |
| Voltages (V) | Y connection | **380** | **400** | **415** | **-** | **380** | **416** | **440** | **480** | **-** |
| | YY connection | 190 | 200 | 208 | - | 190 | 208 | 220 | 240 | - |
| | Δ connection | 220 | 230 | 239 | - | 220 | 240 | 254 | 277 | - |
| | ΔΔ connection | 110 | 115 | 120 | - | 110 | 120 | 127 | 138 | - |
| | Zig-zag or single phase delta | - | - | - | 190 - 200 | - | - | - | - | 220 - 240 |
| Output power (kVA) | ΔT=80°C (Ta=40°C) | 168 | 168 | 159 | 97.0 | 168 | 180 | 186 | 208 | 108.0 |
| | ΔT=105°C (Ta=40°C) | 192 | 192 | 182 | 110.9 | 190 | 206 | 217 | 238 | 125.0 |
| | **ΔT=125°C (Ta=40°C)** | **210** | **210** | **199** | **121.2** | **210** | **225** | **233** | **260** | **135.0** |
| | ΔT=150°C (Ta=40°C) | 230 | 230 | 218 | 132.8 | 230 | 246 | 250 | 290 | 144.0 |
| | ΔT=163°C (Ta=27°C) | 240 | 240 | 228 | 138.6 | 240 | 255 | 260 | 295 | 150.0 |
| Electrical data (FP=0.8 / ΔT=125°C / Ta=40°C) Satured reactances values | Xd(%) Dir. axis synchronous reactance | 479.6 | 390.2 | 338.3 | 639.43 | 571.4 | 487.0 | 456.8 | 414.55 | 609.11 |
| | X'd(%) Dir. axis transient reactance | 18.3 | 14.9 | 12.9 | 24.4 | 21.8 | 18.6 | 17.4 | 15.82 | 23.24 |
| | X"d(%) Dir. axis subtrans. reactance | 13.1 | 10.7 | 9.3 | 17.5 | 15.6 | 13.3 | 12.4 | 11.26 | 16.6 |
| | Xq(%) Quad. axis sync. reactance | 132.6 | 107.9 | 93.5 | 176.82 | 158.0 | 134.7 | 126.3 | 114.63 | 168.43 |
| | X"q(%) Quad. axis subtrans. react. | 10.5 | 8.5 | 7.4 | 14.0 | 12.5 | 23.2 | 10.0 | 9.01 | 13.28 |
| | X2(%) Negative sequence reactance | 17.1 | 13.9 | 12.1 | 22.82 | 20.4 | 18.2 | 16.3 | 14.75 | 21.71 |
| | X0(%) Zero sequence reactance | 2.2 | 1.8 | 1.5 | 2.92 | 2.6 | 2.2 | 2.1 | 1.88 | 2.77 |
| | T'd(ms) Short Circ.Trans.time const. | 66.1 | 53.8 | 45.2 | 88.18 | 78.8 | 64.2 | 63.0 | 57.17 | 84.0 |
| | T"d(ms) Short Circ. Sub. time const. | 1.7 | 1.4 | 1.2 | 2.32 | 2.1 | 1.7 | 1.7 | 1.5 | 2.21 |
| | T'do(ms) Open Circ. time const Trans | 1319 | 1073 | 901 | 1758.45 | 1571 | 1281 | 1256 | 1140.03 | 1675.07 |
| | T"do(ms) Open Circ. time const Subt | 2.4 | 1.9 | 1.6 | 3.18 | 2.8 | 2.3 | 2.3 | 2.06 | 3.03 |
| | Ta(ms) Armature time const. | 11 | 9 | 7 | 14.59 | 13 | 11 | 10 | 9.46 | 13.9 |
| | uc(V) Full load excitation voltage | 49.3 | 46.9 | 49.7 | 49.29 | 37.3 | 42.9 | 38.7 | 41.64 | 38.66 |
| | ic(A) Full load excitation current | 4.0 | 3.9 | 4.1 | 4.05 | 3.1 | 3.5 | 3.2 | 3.42 | 3.18 |
| | ic(A) No load excitation current | 0.7 | 0.8 | 0.8 | 0.88 | 0.5 | 0.7 | 0.7 | 0.76 | 0.88 |
| | Icc(A) Sustained Short-Circ. Current | 957 | 909 | 831 | 909.33 | 957 | 943 | 917 | 938.19 | 843.75 |
| | Kcc Short-circuit ratio | 0.43 | 0.35 | 0.3 | 0.58 | 0.52 | 0.45 | 0.41 | 0.37 | 0.55 |

| | Power factor | 0.8 | 1.0 | 0.8 | 1.0 | 0.8 | 1.0 | 0.8 | 1.0 | 0.8 | 1.0 | 0.8 | 1.0 | 0.8 | 1.0 | 0.8 | 1.0 | 0.8 | 1.0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Efficiency (%) | 25% of load | 91.2 | 93 | 91.4 | 93.2 | 91.9 | 93.8 | 83.9 | 85.6 | 91.4 | 93.1 | 91.4 | 93.1 | 91.4 | 93.1 | 91.3 | 93.1 | 84.1 | 85.6 |
| | 50% of load | 92.7 | 94.4 | 92.8 | 94.5 | 93.4 | 95.1 | 85.2 | 86.8 | 92.9 | 94.5 | 93.1 | 94.6 | 93.2 | 94.7 | 93.2 | 94.8 | 85.8 | 87.2 |
| | 75% of load | 92.2 | 94.2 | 92.5 | 94.4 | 93.1 | 95 | 84.8 | 86.6 | 92.6 | 94.3 | 92.8 | 94.5 | 93.1 | 94.7 | 93.1 | 94.8 | 85.6 | 87.1 |
| | 100% of load | 91.4 | 93.5 | 91.8 | 93.9 | 92.4 | 94.4 | 84 | 86 | 91.7 | 93.7 | 92.1 | 94 | 92.4 | 94.3 | 92.6 | 94.4 | 85 | 86.7 |
| | 125% of load | 90.2 | 92.6 | 90.9 | 93.2 | 91.5 | 93.8 | 80.8 | 83.4 | 90.7 | 93 | 91.2 | 93.4 | 91.5 | 93.6 | 91.9 | 93.9 | 84.2 | 86.1 |

**Other characteristics**

| | |
|---|---|
| Air flow | : 1.16 m³/s |
| Exciter stator winding resistance at 20ºC | : 12.17 ohm |
| Stator winding resistance at 20ºC | : 0.02664 ohm |
| Rotor winding resistance | : 1.5 ohm |
| Stator winding layers | : 2 |
| Inertia WR² | : 2.37 kgm² |
| NDE Bearing | : 6314 2RS |
| DE bearing | |
| Flange | : SAE 1 |
| Coupling disc | : SAE 14 |

**Automatic voltage regulator**

| | |
|---|---|
| Accuracy (stability) | : +/- 0.5% |
| Rated current | : 5 A |
| Analog input | : Yes |
| Digital input | : No |
| Peak current | : 7 A/10 s |
| Droop / TC | : Yes |
| Dynamic recovery | : 8 to 500 ms |
| U/F | : Yes |
| Internal voltage adjustment | : +/- 15% |
| External voltage adjustment | : +/- 10% |
| Transient recovery time for ΔU=20% | : 500 ms |

**According to:**

IEC 60034
NBR 5117
NEMA MG1
VDE530
ISO 8528
CSA

| Rev. | Changes Summary | Performed | Checked | Date |
|---|---|---|---|---|
| | | | | |

| | | | | |
|---|---|---|---|---|
| Performed by | | | | |
| Checked by | | | Page | Revision |
| Date | 10/08/2022 | | 1 / | |